Chemical Downwind Messages

What is it?

- A CDM is a message containing coded-forecast meteorological information used to predict chemical and/or biological hazard areas.

- It is a forecast for the lower portion of the atmosphere. Due to the close proximity to the ground, the amount of insolation received, will greatly effect the stability used to compute the CDM.

- The best conditions for introduction of a NBC agent are at night, under stable conditions, and weak winds, while the optimum conditions for dispersal are during the day, under unstable conditions, and strong winds

The Where and When of the CDM.

- A CDM is usually prepared for a specific location. However, the TFU will prepare a CDM for the Region(s)/AOR requested. Due to a wide variety of terrain, weather, and surface winds on the peninsula, a CDM forecast for a region will vary. In a contingency forecast, weather data taken at or near the attack area is the best data to use and should be produced for the smallest area possible.

- When requested, the TFU forecaster will prepare a CDM every 6 hours either by hand computation or the CDM calculator located in PACTIPS.

What makes up a CDM?

- A CDM contains forecasts of the following meteorological data for three consecutive two hour periods.
    - Date time group of beginning of forecast period
    - Surface wind, Downwind Direction and speed in Kilometers per   hour.
    - Air stability category.
    - Surface air temperature.
    - Surface relative humidity.
    - Significant weather phenomena.
    - Cloud cover.

OK, I know what goes into it, but how do I do it?

- Enter the date time group as follows
  - Initial forecast start time (local) to the end of the forecast period
    - i.e. 021200L - 021800L
- Each 2 hour forecast group is preceded by an identifier, and consists of two 6 digit blocks:
  - Whiskey (W) DDDSSS ITTRWC
  - X-Ray   (X) DDDSSS ITTRWC
  - Yankee   (Y) DDDSSS ITTRWC

CDM Breakdown

- (DDD) Encode wind direction as the downwind direction (The direction the winds are blowing towards)
  - i.e. 340 degrees (from) = 160 degrees (to)
- (SSS) Wind speeds are encoded in Kilometers per hour (1KT = 1.85235 KPH)
  - i.e. 10KTS = 19KPH
- (I) Stability of the lower atmosphere, use the following codes for this category using attachment 1 of 607WS SOP 2-22:
    - **1 = Very unstable**
    - **2 = Unstable**
    - **3 = Slightly unstable**
    - **4 = Neutral**
    - **5 = Slightly stable**
    - **6 = Stable**
    - **7 = Very stable**.

CDM Breakdown continued…

- (TT) Encode Temperatures as the high temperature for the time period in degrees Celsius. If the temperature is less than 00 degrees Celsius subtract 50.
  - i.e. M03 C = 53
- (R) Encode RH as the maximum relative humidity for the forecast period.
  - 50% RH = 5

0 = 0-9%	5 = 50-59%
1 = 10-19%	6 = 60-69%
2 = 20-29%	7 = 70-79%
3 = 30-39%	8 = 80-89%
4 = 40-49%	9 = 90-100%

CDM Breakdown continued... (again)

- **(W) Encode weather conditions (rain, thunderstorms, fog, etc...) using the following codes:**

  - **- No significant weather.**
  - **3 Blowing snow, sand storm, snowstorm.**
  - **4 Fog, ice fog, or thick haze (visibility less than 4 KM/2.5 SM).**
  - **5 Drizzle.**
  - **6 Rain.**
  - **7 Snow, rain and snow mixed.**
  - **8 Snowshowers, rainshowers, mixed showers, or hail.**
  - **9 Thunderstorm, with or without precipitation**

CDM Breakdown continued...

- The cloud cover, identified by "C", is coded as follows:

    0 = Less than half of sky covered by clouds, scattered.
    1 = More than half of the sky covered by clouds, broken.
    2 = Sky completely covered by clouds, overcast.

So let's put it all together.

- Using the following TAF:

  RKSM TAF 100303Z 12007KT 0800 FG BKN005 OVC010 QNH2988INS
  BECMG 0405 16010KT 4800 -SHRA BKN030 QNH2990INS
  BECMG 0607 18010KT 9999 SCT030 QNH2992INS T20/06 T10/22;

- We would encode the CDM as:
- Whiskey 300013 516842
- X-Ray   340019 520681
- Yankee 360019 4194-0

To conclude…

- Accomplishing the CDM as most of us all know is relatively easy, it just takes a little time.

- If you find the format hard to remember and can not find a CDM format in an SOP or from the NBC unit, there is a CDM calculator available in PACTIPS. However this is only really good for wind and temperature conversions, it does not convert any other parameter you have to do this on your own.